

## NOTES ON BETULA.

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THE finding in the mountains of North Carolina of *Betula papyrifera cordifolia* (Regel) Fern., not only adds another tree to this intensively investigated region but extends the range of this form southward about 550 miles, Goshen, Litchfield County, Connecticut,<sup>1</sup> and Woods Hole, Massachusetts,<sup>2</sup> being the hitherto most southerly reported eastern stations. A single specimen of this birch was noticed in July 1915, on the eastern flank of Mt. Mitchell, in the Black Mountain range. In March 1916, while I was camping on the summit with my associates in the United States Forest Service, Messrs. Noyes and Damtoft, a large number of these trees were noticed on the western slope of the range. In October 1916, the fruit was scant, but in September 1917, abundant fruiting material was collected from a number of trees. In 1916 fruiting material was referred to Blanchard, who seemed to regard it as typical. These investigations show this species to be generally distributed in these mountains above an altitude of 5500 feet in the spruce and balsam forest. Specimens can be located readily at the following places: east slope of Mt. Mitchell on north side of trail between summit and old sawmill commissary, at an altitude of 6200 feet; in the gap to the north of the second of the Black Brothers peaks, which is about one mile north of Mitchell Peak; on the west side of the crest trail near where the Pensacola trail leaves the Buncombe County trail. Nearly every investigator who has ascended the mountain has passed within a few feet of this last tree.

It is estimated that this species forms about .05 of one per cent of this forest. One specimen measured 16 inches in diameter at breast-height and had an estimated height of 70 feet; but the usual range of diameters is from 10 to 12 inches and corresponding heights of from 40 to 60 feet, exceeding the dimensions recorded for the tree in New England. Prof. Fernald has informed me, however, that he has measured trees of this form in Newfoundland 3 to 4 feet in diameter,

<sup>1</sup> Bissell, in *Flow. Pl. of Conn.*, 148 (1910).

<sup>2</sup> Bartlett, *Rhod.* 11, 231 (1909).

from which it seems that its best individual development is attained on this island.

There seems to be considerable confusion regarding the status of this form. By the seventh edition of Gray's Manual (335, 1908) and by Sargent (Man. 204, 1905) it is regarded as varietal. Britton (Trees, 251, 1908) gives it specific rank but states that it may be only a form of *B. papyrifera* having heart-shaped leaves and Blanchard also regards it as of specific standing. Prof. G. R. Burns (in lit., 1917) states that it intergrades with the type. The cordate-leaved tree, however, at least in the east, is confined to higher altitudes and has a more northerly range; and it is not known to occur in association with the type in the southern part of New York state, in Pennsylvania or in Ohio. Moreover, this seems to be the only form on the higher summits of New England, where it occurs as a small tree. The fact that the cordate form alone occurs in North Carolina, and that there its leaf-form is strongly marked and without indication of variation — foliage was examined from more than 100 trees — would at least seem to give it excellent varietal if not specific characterization. Specimens from this locality are being deposited in the following herbaria: Gray, Arnold Arboretum, New York Botanical Garden, National, Carnegie and Field.

*BETULA LENTA* **uber** n. var. Leaves ovate or short elliptic, 2.5–4 cm. long by 2.3–3.5 cm. wide, rounded or very obtuse at the apex, mostly with a broad, deep basal sinus or sometimes oblique, irregularly serrate with three to six pairs primary veins; petiole 0.5–1 cm. long. Fruit same size and scales same shape as in the type, but nutlets narrowly winged. Bark as in type, and inner bark with characteristic birch oil fragrance and flavor. — Banks of Dickey Creek, Smyth County, Virginia, south of Rye Valley Station. January 14, 1914, W. W. A. Characteristic specimens are being deposited in following herbaria: Gray, Arnold Arboretum, N. Y. Botanical Garden, and National.

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